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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,357	10/10/2003	Ian M. Bennett	PHO 99001C	3197

23694 7590 09/04/2007
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EXAMINER	
LERNER, MARTIN	
ART UNIT	**PAPER NUMBER**
2626	
MAIL DATE	**DELIVERY MODE**
09/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/684,357	**Applicant(s)** BENNETT ET AL.
	Examiner Martin Lerner	**Art Unit** 2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11 to 15, 46, 53 to 57, and 71 to 74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11 to 15, 46, 53 to 57, and 71 to 74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicants' election without traverse of Group I, Claims 11 to 15, 46, and 53 to 57, in the reply filed on 15 March 2007 is acknowledged.

2. Claims 27 to 34 and 58 to 70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 March 2007.

Claim Objections

3. Claim 46 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claim 46, a claim directed to a system, improperly depends upon claim 11, which is a claim directed to a computer-readable medium. Apparently, claim 46 should depend upon non-elected independent claim 29. It is suggested that claim 46 should be amended to be properly dependent on independent claim 11, or cancelled.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 14 and 56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claims 14 and 56 contain the limitation of computing compressed MFCC coefficients at either the client system or the server computing system "on a connection by connection basis", which limitation is not supported by a written description in the originally-filed Specification. Applicants' Specification discloses optimizing computation of MFCC coefficients on a case-by-case basis ¶[0173], and a system-by-system basis ¶[0174], but not on a connection-by-connection basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 11 to 13, 15, 46, 53 to 55, 57, and 71 to 74 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by *Bennett ('977).*

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

(Note: The inventive entities are not identical, insofar as *Bennett ('977)* has an inventive entity consisting only Ian M. Bennett, but the current application has three additional inventors.)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 11 to 12, 46, 53 to 54, and 71 to 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Barclay et al.* in view of *He et al.*

Concerning independent claims 11 and 53, *Barclay et al.* discloses a client/server speech recognizer, comprising:

"a first audio signal receiving routine for receiving user speech utterance signals representing speech utterances to be recognized during a sequence of speech utterance evaluation time frames, said speech utterances including sentences comprised of one or more words" – client system 2 has microphone 10 that accepts audio input, converts a sound into a digital representation by analog to digital conversion (ADC), and extracts a set of features that provide the best recognition (column 4, line 56 to column 5, line10: Figure 1); speech is recognized as words and sentences for an utterance, "Show me the weather for Boston" (column 3, lines 6 to 24), or "I want to fly from Boston to Denver tomorrow" (column 9, lines 16 to 25); continuous speech is divided into discrete transformed segments that facilitate mathematical operations (column 2, lines 14 to 16); implicitly, these discrete segments are called 'frames' ("a sequence of speech utterance evaluation time frames");

"a first signal processing routine adapted to generate representative speech data values for each speech utterance evaluation time frame during which speech utterance signals are received, [said representative speech data values including a set of compressed mel-frequency cepstral coefficients (MFCC)]" – client system 2 has front-end 12 that extracts a set of features ("representative speech data values"), called cepstra, that provide the best recognition, and the features are quantized (column 5, lines 2 to 11: Figure 1);

"a formatting routine for rendering said representative speech data values into a transmission format suitable for transmission from the client system over a communications channel to a second processing routine executing on the server computing system" – dispatcher program of the client 70 sends quantized speech features via a communications link to server computer system 80 (column 5, line 48 to column 6, line 6: Figure 4); a dispatcher implements transmission by TCP/IP protocol (column 6, lines 50 to 53);

"wherein said representative speech data values are transmitted continuously during said speech utterances within streaming packets and without waiting for silence to be detected and/or said speech utterances to be completed" – the dispatcher does not wait for completion of logical blocks and the dispatcher itself is designed to quickly service the Internet with minimum overhead time (column 6, lines 56 to 59); front end streams the quantized data to the dispatcher, where 'stream' is defined as to send substantially continuously the data in real-time (column 7, lines 13 to 19); features are sent as packets (column 7, lines 48 to 59), implicitly, in TCP/IP protocol, a most likely transcription or text is determined unit an end-of-speech (EOS) is received (column 6, lines 5 to 8); thus, a dispatcher does not wait until an end-of-speech, *i.e.* silence, is detected to initiate transmission of quantized feature data;

"further wherein said representative speech data values constitute a minimum amount of information that can be used by said second processing routine to complete accurate recognition of said one or more words and said sentences" – extracted sets of features, called cepstra, are those features that provide the best recognition as known in the art (column 5, lines 2 to 8); implicitly, cepstra are "a minimum amount of information that can be used" for speech recognition because they are a compressed form of the most relevant features for speech recognition.

Concerning independent claims 11 and 53, *Barclay et al.* discloses cepstra as representative speech data values, and a prior art speech recognition system having grammar that is distributed and down loaded when a Web page for specific topics is entered, called a "smart page" (column 3, lines 6 to 23), but does not expressly disclose "said representative speech data values including a set of compressed mel-frequency cepstral coefficients (MFCC)", or the limitation of "and said communications channel further being configured by the machine executable program such that grammar related information is sent to the second processing routine executing on the server computing system for identifying a grammar to be used for recognition of said one or more words and said sentences." However, mel-frequency cepstral coefficients (MFCC) are a well known form for cepstra in speech recognition. Specifically, *He et al.* teaches an architecture for distributed speech recognition (DSR), where it is stated that Mel Frequency Cepstral Coefficients (MFCC) are a common set of features used by many state-of-the art Hidden Markov Model (HMM) based automated speech recognition (ASR) systems. (Column 2, Lines 58 to 63; Column 5, Lines 6 to 15) Moreover, a server browser 210 interacts with a DSR client, receives document content from a DSR document content server 200, and allocates tasks including generating display content and grammar generation for the client. (Column 6, Lines 4 to 15: figure 2) A dynamic grammar builder 232 processes grammar from speech input, where each dialog has its own grammar that specifies an allowable input word. The grammar builder extracts grammar scripts and keywords from documents, compiles a modified grammar for distributed speech recognition, and puts the modified grammar into a binary format. (Column 7, Lines 20 to 34: Figure 4) Each dialog has one or more associated speech grammars, and, in a server browser directed application, each dialog's grammars are active only when the user is in that dialog. (Column 11, Lines 54 to 60) Thus, *He et al.* provides details regarding grammar identification and generation at a server in response to input from a client, as briefly sketched out in a prior art system by *Barclay et al.* An objective is to fully implement an efficient client-server distributed speech recognition architecture to diverse handheld devices. (Column 2, Lines 4 to 16) It would have been obvious to one having ordinary skill in the art to utilize Mel Frequency Cepstral Coefficients and a server-based grammar as taught by *He et al.* in a client/server speech recognizer of *Barclay et al.* for a purpose of fully implementing an efficient client-server distributed speech recognition architecture for diverse handheld devices.

Concerning claim 12, *Barclay et al.* discloses incorporating a dispatcher into a browser of a client side application for speech recognition at a server (column 8, lines 36 to 64: Figure 4).

Concerning claim 46, *Barclay et al.* discloses a speech query, "Show me the weather for Boston" (column 3, lines 6 to 24).

Concerning claim 54, *Barclay et al.* discloses real-time speech recognition processing and response (Abstract).

Concerning claims 71 and 73, *Barclay et al.* discloses a LISTEN button on a graphical user interface (GUI) of a client, so that speech recognition starts when a user presses a LISTEN button ("in response to a button being pressed on the client system") (column 8, lines 48 to 64); when a user clicks on LISTEN, natural language processing begins for a user request for an airline reservation ("a query/answer routine") (column 9, lines 5 to 30).

Concerning claims 72 and 74, *He et al.* teaches a client device can be a personal digital assistant (PDA), wireless telephone, or portable laptop ("a portable electronics device") (column 1, lines 33 to 37; column 3, lines 9 to 27).

10. Claims 13 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Barclay et al.* in view of *He et al.* as applied to claims 11 and 53 above, and further in view of *Hoory et al.*

He et al. teaches that Mel Frequency Cepstral Coefficients (MFCC) are a common set of features used by many state-of-the art Hidden Markov Model (HMM) based automated speech recognition (ASR) systems (column 2, lines 58 to 63; column 5, lines 6 to 15), but does not say that MFCC's are generated at a rate corresponding to at least 100 frames per second. However, a data rate of at least 100 frames per second is within the range of transmission capabilities for distributed speech recognition employing MFCC's. Specifically, *Hoory et al.* teaches mel-cepstral feature vectors for each single speech frame of 10 msec (column 3, line 43 to column 4, line 38: Figures 1 and 2). A 10 msec frame implies each frame is 10×10^{-3} seconds long, *i.e.* 10^{-2} seconds, so 100 frames are produced every second. Mel-cepstral frequency coefficients are based on binned spectra, or frequency components, from a frequency domain signal and a set of triangular frequency windows ("a separate cepstral coefficient value for a corresponding frequency component of said user speech utterance signals") (column 3, lines 43 to 51; column 4, lines 45 to 57). Implicitly, these frequency components are sampled at a sufficiently high rate so as to be "spanning an audible speech frequency range". Transmitting a compressed version of the set of feature vectors removes overhead required for decoding the speech. (Column 2, Lines 59 to 64; Column 3, Line 43 to Column 4, Line 59: Figures 1 to 3) Thus, the objective is to obtain a low bit rate coding of speech for transmission and recognition at a remote speech recognizer with low overhead. It would have been obvious to one having ordinary skill in the art to provide representative speech data values as a set of compressed mel-frequency cepstral coefficients (MFCC) as taught by *Hoory et al.* for cepstra features of a client/server speech recognizer of *Barclay et al.* for a purpose of obtaining low bit rate coding and low overhead decoding of transmitted speech features.

Response to Arguments

11. Applicants' arguments with respect to independent claims 11 and 53 have been considered but are moot in view of the new ground of rejection, necessitated by amendment.

Applicants' amendment of independent claim 11 overcomes the rejection under 35 U.S.C. §101.

Applicants' terminal disclaimer is approved, obviating the double patenting rejection.

Applicants have not amended claim 46, pursuant to the rejection under 35 U.S.C. §112, 2nd ¶. The rejection is withdrawn, but the claim is now objected to.

Applicants' arguments filed 03 August 2007, regarding the rejections under 35 U.S.C. §102(e) over *Bennett ('977)*, and under 35 U.S.C. §112, 1st ¶, have been fully considered but they are not persuasive.

Firstly, Applicants argue that *Bennett ('977)* is not prior art because its filing data is the same as the filing date of a parent of the current application, namely, 12 November 1999. Applicants identify the parent application as Application Serial No. 09/435,145, and say that the current application, while filed on 10 October 2003, has claims supported by Application Serial No. 09/435,145, and thus, a priority date equal to that of Application Serial No. 09/435,145. Applicants conclude that *Bennett ('977)* cannot be prior art. Applicants' position is traversed.

Applicants have not perfected priority to Application Serial No. 09/435,145 under 35 U.S.C. §120, and, thus, cannot rely upon a constructive filing date of 12 November 1999. *Bennett ('977)* must be considered prior art until domestic priority is perfected under 35 U.S.C. §120. Applicants' Specification, Page 1, lists three "Related Applications", but priority is claimed for none of these applications. Similarly, Applicants' Declaration for Patent Application, filed 10 October 2003, does not mention any claim for domestic priority under 35 U.S.C. §120, or list any applications for which priority is claimed. Moreover, Applicants' Bibliographic Data Sheet (which may be available to Applicants on PAIR) does not show any Continuity Data, nor does any Continuity Data appear on the face of the file wrapper. Applicants submitted a Request for a Corrected Filing Receipt on 03 March 2004, saying that the Utility Patent Application Transmittal Letter and a Preliminary Amendment clearly show continuity to

Application Serial No. 09/435,145, but Applicants misrepresent the content of these documents. Applicants' Substitute Specification still only refers to "Related Applications", and there is no indication in the Utility Patent Application Transmittal Letter that continuity is requested under 35 U.S.C. §120, even assuming such a request would be sufficient. Consequently, domestic priority was never granted pursuant to Applicants' Request for a Corrected Filing Receipt, and the failure to grant priority was proper because Applicants' failed to comply with the conditions for such grant. Thus, *Bennett ('977)* remains prior art because Applicants have not perfected domestic priority under 35 U.S.C. §120.

Secondly, Applicants argue that they are "puzzled" and "truly baffled" by the rejection of claims 14 and 56 under 35 U.S.C. §112, 1st ¶, for the limitation of "on a connection-by-connection basis". Applicants resubmit a Declaration by Dr. Melvyn submitted in Related Application Serial No. 11/030,864, and discuss the Specification, Pages 27, 31 to 33, and Figures 2A, 2C, 2D, 3 and 4. Applicants' position is not persuasive.

Preliminarily, it is noted that Applicants' citations of Pages and Lines from the Specification do not appear to match up with the Pages and Lines of either the originally-filed Specification or the Substitute Specification, both filed on 10 October 2003. Thus, it is difficult to see whether Applicants have met their burden of proof in rebutting the rejection under 35 U.S.C. §112, 1st ¶, if the Pages and Lines do not match what Applicants say is disclosed.

Nor is the thrust of Applicants' arguments convincing. It is agreed that setting up connections and sessions is disclosed by the Specification. However, it doesn't follow that a re-allocation of resources is performed for every connection and every session. Resources could be re-allocated within a same session or during a same connection based on variations of network traffic conditions during a session or connection, and not on a connection by connection basis. Alternatively, it is conceivable that re-allocation of resources is performed on a fixed polling schedule – say, once every ten minutes – in a manner that is unrelated to a session or connection. Applicants' Specification certainly does not say expressly that the data content is calculated "on a connection by connection basis", and the burden has shifted to Applicants to show that it does. Applicants say they are "puzzled" and "baffled" as to a failure of the Specification to disclose the claimed embodiment; the Examiner is equally puzzled and baffled that Applicants would wish to re-visit an issue that was previously considered in a Related Application, where corresponding claims were cancelled pursuant to an analogous rejection.

Therefore, the rejections of claims 14 and 56 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement; of claims 11 to 13, 15, 46, 53 to 55, 57, and 71 to 74 under 35 U.S.C. §102(e) as being clearly anticipated by *Bennett ('977)*; of claims 11 to 12, 46, 53 to 54, and 71 to 74 under 35 U.S.C. §103(a) as being unpatentable over *Barclay et al.* in view of *He et al.*; and of claims 13 and 55 under 35 U.S.C. §103(a) as being unpatentable over *Barclay et al.* in view of *He et al.*, and further in view of *Hoory et al.*, are proper.

Conclusion

12. Applicants' amendment necessitated the new ground of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
8/29/07

Martin Lerner

Martin Lerner
Examiner
Group Art Unit 2626